

Technical University of Denmark



Characterization of the gene expression response in a preterm pig model of necrotizing enterocolitis

Støy, Ann Cathrine Findal; Sangild, Per T.; Skovgaard, Kerstin; Heegaard, Peter Mikael Helweg

Publication date:
2013

[Link back to DTU Orbit](#)

Citation (APA):

Støy, A. C. F., Sangild, P. T., Skovgaard, K., & Heegaard, P. M. H. (2013). Characterization of the gene expression response in a preterm pig model of necrotizing enterocolitis. Abstract from 10th International Veterinary Immunology Symposium, Milano, Italy.

DTU Library

Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Characterization of the small intestinal gene expression response in a preterm pig model of necrotizing enterocolitis

Ann Cathrine Findal Støy, Per T. Sangild, Kerstin Skovgaard, Peter M. H. Heegaard

In preterm infants, the serious gastrointestinal disease, necrotizing enterocolitis (NEC), is caused by the combined effect of abnormal bacterial colonization, enteral feeding, and prematurity, including immaturity of the immune system. In a well-established preterm pig model of NEC, the effect of diet on disease development has been studied thoroughly; however, the inflammatory response during NEC needs to be characterized to improve and promote the use of this model as a model for human disease. We investigated how expression of genes related to immune function and gut maturation in distal small intestinal tissue was affected by NEC development in a number of experimental diet groups. Preterm pigs delivered by Cesarean section received total parenteral nutrition for 2 d followed by enteral nutrition for an additional 2 d: bovine colostrum (n = 6), infant formula (FORM, n = 13), FORM for 6 h followed by bovine colostrum (n = 14), spray dried bovine colostrum (n = 8) or pasteurized, spray dried bovine colostrum (n = 9). At euthanasia, the gastrointestinal tract (stomach to colon) was evaluated for NEC lesions using a severity score ranging from 1–6 (6 being severe NEC). Pigs with a severity score of minimum three in any gastrointestinal region was regarded as a case of NEC. High throughput qPCR was used to investigate the gene expression of 48 genes in intestinal tissue. Across all enteral diet groups, a relatively higher expression of IL-6, IL-8, IL1-RA and CCL3 was seen in pigs suffering from NEC compared with healthy pigs. In conclusion, the expression of four genes coding for proteins involved in inflammation was increased in pigs suffering from NEC compared to healthy pigs irrespectively of enteral diet group, which points to inflammation as being an important component of NEC. Further studies will address the relationship of inflammation related gene expression and the development of NEC in order to elucidate cause-effect relationships leading to NEC.